

CLAIMS

WHAT IS CLAIMED IS:

- 5           1.       A method for operating an implantable cardiac stimulation device that dynamically modifies a pacing pulse energy, the method comprising:
- determining whether one or more operating parameters require adjustment in response to a change in the pacing pulse energy; and
- adjusting a value for an operating parameter to a new value if the operating parameter requires adjustment, wherein the new value is based upon the pacing pulse energy.
- 15           2.       The method of claim 1, wherein the pacing pulse energy comprises one of an atrial pacing pulse amplitude and a ventricular pacing pulse amplitude.
3.       The method of claim 1, wherein the operating parameter comprises one of a blanking period, maximum sensor rate, refractory period, and sensitivity level.
- 20           4.       The method of claim 1, wherein the operating parameter comprises a maximum sensor rate, and wherein adjusting a value is based upon a current battery energy level and the pacing pulse energy.
- 25           5.       The method of claim 1, wherein automatically adjusting a value comprises:
- determining a characteristic of the pacing pulse energy being changed;

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determining one or more corresponding operating parameters based on the characteristic of the pacing pulse energy being changed; determining one or more new values for the one or more operating parameters; and

5 storing the one or more new values in an appropriate memory location.

6. The method of claim 1, wherein determining a characteristic comprises determining whether the pacing pulse energy being changed is the atrial or ventricular pacing pulse energy.

7. The method of claim 5, wherein determining one or more new values for the one or more operating parameters comprises determining the one or more new values based on the magnitude of the

15 pacing pulse energy.

8. A method for operating an implantable cardiac stimulation device that dynamically modifies pacing pulse energies, the method comprising:

- 20 (a) determining an operating parameter to adjust based upon a characteristic of the pacing pulse energy that is changed;
- (b) determining a new value for the operating parameter based upon the new pacing pulse energy; and
- (c) storing the new value in a memory location associated with
- 25 the operating parameter.

9. The method of claim 8, wherein determining a new value comprises: accessing an operating parameter table and determining a corresponding value for the operating parameter based on the pacing

30 pulse energy level.

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10. The method of claim 8, wherein determining a new value comprises calculating the new value using a function associated with the operating parameter.

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11. An implantable stimulation device comprising:
- (d) a pulse generator that generates stimulation pulses;
  - (e) cardiac sensing circuitry that generates sense signals; and
  - (f) a control unit coupled with the pulse generator and the cardiac sensing circuitry, the control unit being configured to:
    - (i) determine a capture threshold based on one or more signals from the sensing circuitry;
    - (ii) adjust a pacing pulse output energy in response to a change in capture threshold; and
    - (iii) modify a value for one or more operating parameters when the pacing pulse output energy has been changed, wherein the new value is based upon the new pacing pulse energy.

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12. The implantable stimulation device of claim 10, wherein the control unit comprises a microcontroller and a control program, and wherein the implantable stimulation device further comprises a memory.

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13. The implantable stimulation device of claim 11, wherein the control program causes the microcontroller to perform the modifying operation by executing the steps of:
- (g) checking the memory to determine whether auto-adjustment of the operating parameter is enabled;

- (h) determining the new value for the operating parameter if auto-adjustment of the operating parameter is enabled; and
- (i) storing the new value in a memory location in the memory that is associated with the operating parameter.

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14. The implantable stimulation device of claim 12, wherein the control program causes the microcontroller to determine the new value by executing the steps of:

- (j) converting the new pacing pulse energy into an array index; and
- (k) using the array index to identify an element of an array containing the new value, wherein the array is associated with the operating parameter.

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15. The implantable stimulation device of claim 13, wherein the elements of the array are programmable.

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16. The implantable stimulation device of claim 12, wherein the control program causes the microcontroller to determine the new value by calculating the new value using a function associated with the operating parameter.

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17. The implantable stimulation device of claim 15, wherein the function associated with the operating parameter is programmable.

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18. The implantable stimulation device of claim 10, wherein the operating parameter comprises a maximum sensor rate parameter.

19. The implantable stimulation device of claim 10, wherein the pacing pulse energy comprises an atrial pacing pulse amplitude.

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20. The implantable stimulation device of claim 18, wherein the operating parameter comprises a ventricular blanking period parameter.

21. An implantable stimulation device comprising:

- (l) means for generating a stimulation pulse having a pulse energy level;
- (m) means for sensing cardiac activity;
- (n) means for modifying the pulse energy level; and
- (o) means for adjusting a value for an operating parameter when the pulse energy level has been modified, wherein the adjusted value is based upon the modified pulse energy level.

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